

Developing Tree Purchase and Planting Specifications for Bid

IDL (7/04)

The following is a template for developing specifications for the purchase and planting of landscape trees to be used by a local government or nonprofit organization¹. It is designed with the tree's best interest as its guiding principle and reflects current research-based standards. This template is not a boilerplate where you simply fill in your name. It is designed so that the final specification will be adjusted to fit individual needs and circumstances.

How to Use the Specification Template

Much of the template is recommended for all specifications; however there are a number of situations that require a decision on the part of the purchaser. This may depend on the preference of the purchaser, the planting site, the purchaser's resources or the availability and capability of local bidders. Where information specific to the purchaser is needed, the template will show a blank line with the needed information shown in parentheses. Where decisions are required, the template offers options to choose from which include an explanation of desired or expected results. Option wording, shown in normal text, should be included in the specification.

Wording in *italics* is the option's explanation and should not be included in the final specification.

Remember that this is a recommended, not a required, specification. Every jurisdiction may have its own wording and requirements for specifications. For example, a contract surety bond may be advisable or required. Make sure that your final specification has been reviewed by your attorney to be sure you are complying with local regulations and policies.

Selection of a Bidder

Some of the specified or optional practices in this template may be more stringent than common practices in the industry, and will likely result in a more expensive contract. However, the specifications are designed with the tree's best interest as its guiding principle, not ease or speed of installation. Reputable bidders will carefully read the specification and bid accordingly. Less reputable bidders may simply bid according to their common practice and as a result come in with a lower bid. The resulting job performance may be sub-standard or poor quality. It is important to have a pre-opening meeting to answer any questions that the specification may generate and to weed out any potentially disappointing bidders.

It also would be wise to get to know the nurseries you expect to use. Visit their fields and get to know the owners and managers. Share your needs with them so they will know your expectations. They can tell you the best time to submit your order to get the best selection. The nursery business is unlike other suppliers. Demand cannot be met simply by making more widgets when they are requested. Demand must be anticipated years in advance.

Caution

Specifications are only as good as their enforcement. It is important to have a trained inspector monitoring the job as it progresses. If it is known that there will be no inspection, disreputable bidders will under-bid a job and cut corners to make up the difference. Do not wait to do the inspection until the job is complete. If planted nursery stock is sub-standard, it is often impossible to find replacements until the following year. It may also be very difficult and damaging to the trees to correct improper planting after the fact.

Reference

If you are unfamiliar with planting practices it would be wise to acquire the following reference which will explain much of the science and reasoning behind the specifications. It is available from the International Society of Arboriculture at (217) 355-9411.

Watson, Gary W. and E.B. Himelick. 1997. Principles and Practice of Planting Trees and Shrubs. International Society of Arboriculture, Champaign, IL. 199p.

¹ This specification was developed by the Wisconsin Department of Natural Resource's Urban Forestry Working Group with input from both local governments and the green industry. It has been adapted for use in the State of Idaho.

TREE PURCHASE AND PLANTING SPECIFICATIONS

Pre-qualification of Bidders

All bidders, prior to award of contract must present satisfactory evidence that they have been regularly engaged in this type of work and they are prepared with the necessary labor, materials and equipment to execute work to the satisfaction of the Purchaser. This evidence includes _____ (Specify required evidence). *Note: This evidence could include a reference list including name, address, phone number and description and dates of completed projects. Other evidence might include a payroll list, equipment inventory, nursery stock inventory or other evidence that indicates these resources are available to the bidder. An inspection of the business premises may be helpful.*

Proposal Form

All proposals shall be made on the attached proposal forms. Bidders must submit prices for the bid in both words and figures. In case of discrepancy, written words shall prevail. Prices shall be given by tree price, planting price, and total price.

Award of Contract or Contracts:

Contract will be awarded to the lowest, responsible, qualified bidder whose proposal complies with the requirements. There may be more than one contract awarded. Contractor should bid on the services that they provide or materials that they have. The Purchaser reserves the right to reject any and all proposals, and to accept the bid or bids most advantageous to them.

Examination of Plans, Specifications and Sites

Bidders may examine all plans, specifications and sites. No deviation from specifications will be allowed without written consent from _____ (Purchaser's Representative) prior to award of contract. Failure to fully examine project sites and work requirements will not relieve bidder from performing work as per plan and specifications.

Insurance and Worker's Compensation

The Contractor shall furnish evidence of Worker's Compensation, public liability and property damage insurance. Limits of insurance shall be as follows: Minimum amounts of \$1,000,000 bodily injury and \$500,000 property damage including both injury and property damage caused by vehicles and machinery. A certificate of insurance shall be filed with _____ (Purchaser's Representative and address).

Inspection and Payment

The Purchaser shall inspect work periodically to insure that all specifications are adhered to. In no case shall the final payment be made until the Contractor has complied with all requirements set forth and the Purchaser has made final inspection of the entire work and is satisfied that the entire work is properly and satisfactorily complete per plans, specifications, and ready for Purchaser acceptance.

Completion

All work shall be completed by _____ (date) unless otherwise approved as noted in project specifications.

Guarantee

All work and materials shall be guaranteed in writing as specified in section 15.

Questions

All questions regarding these specifications shall be directed to _____ (name), _____ (title) at _____ (phone #).

1. Scope

- A. These specifications, including drawings and plant materials lists, apply to those items necessary for and incidental to the execution and completion of planting as indicated herein.
- B. All labor, supervision, equipment, materials, and supplies necessary for the execution of the work shall be provided for by the Contractor at no additional cost to the Purchaser.
- C. Reasonable care shall be exercised during excavation, planting, filling, grading, and cleanup, to protect from damage all existing trees, shrubs, and other specified vegetation, and other site features, improvements, structures, and utilities.

In planting situations where there are existing trees or other features that need specific protection, the following optional language may be desired. To save money, the tree protection plan and implementation could be done by the purchaser. Information on protecting trees during construction is available from the IDL.

Option 1:

- 1. A site protection plan, approved by the purchaser, must be provided by the Contractor. The plan must include a site map showing equipment traffic routes, material storage areas, and the location of tree and feature protection methods such as fencing, bridging, mulching, etc.

2. Applicable Specifications and Standards

- A. **American Standard for Nursery Stock, ANSI Z60.1.** current edition. American Association of Nurserymen, Inc., 1250 I St. NW, Suite 500, Washington, D.C.20005
- B. **Index of Garden Plants: The New Royal Horticultural Society Dictionary.** By Mark Griffiths. 1994. Timber Press, Inc. Portland OR.
- C. **American National Standard for Tree Care Operations, ANSI A300** -most current edition. International Society of Arboriculture, PO Box 3129, Champaign IL 61826-3129.

3. Planting Season

- A. Planting shall be done within the following dates:

- 1. deciduous trees and shrubs _____ to _____.
- 2. evergreen trees and other _____ to _____.
- 3. Exceptions: _____

Options: Acceptable planting times depend on plant species, type of stock, climate, and weather.

Spring, after the ground thaws and before the tree buds begin to grow, is the best time to plant most species, however late summer through fall is acceptable for many species. With care and proper techniques, planting may also be feasible in summer. The following recommendations are the optimal planting times. Weather and other circumstances may require variance from these dates - see B. below.

Option 1. Spring Planting

- 1. April 1 to May 30
 - 2. April 15 to June 15
 - 3.
- ### Option 2. Fall Planting:
- 1. September 1 to November 1
 - 2. September 15 to November 15
 - 3.

- B. If special conditions exist that warrant a variance in the above planting dates, a written request shall be submitted by the Contractor to _____ (*Purchaser's representative*) stating the special conditions and the proposed variance. Permission for the variance will be granted at the discretion of the Purchaser.

4. Materials

- A. A complete list of plants, including a schedule of quantities, sizes, and other requirements is included. In the event that discrepancies occur between quantities of plants indicated in the Plant List, and as indicated on the Drawings, the plant quantities indicated on the Drawings shall govern.

The Contractor shall furnish a written list of the proposed sources of nursery stock. Such a list shall be furnished with completed bid documents. Such list may not be added to or altered without the consent of the Purchaser.

All plant material shall conform to **American Standard for Nursery Stock**. Plants shall be true to species and variety specified and nursery grown in accordance with good horticultural practices under climatic conditions similar to those in the locality of the project for at least 2 years. They shall have been freshly dug (during the most recent favorable harvest season). Plants shall be so trained in development and appearance as to be unquestionably superior in form, compactness, and symmetry. They shall be sound, healthy, vigorous, well branched and densely foliated when in leaf, and free of disease and insect adults eggs, pupae or larvae. They shall have healthy, well-developed root systems and shall be free from physical damage or other conditions that would prevent thriving growth.

Trees with multiple leaders, unless specified, will be rejected. Trees with a damaged, cut, or crooked leader, included bark, abrasion of bark, sunscald, disfiguring knots, insect damage, mold, prematurely opened buds, or cuts of limbs over 3/4 inch (2 cm) diameter that are not completely callused are cause for rejection.

Balled and burlapped plants shall be dug with solid balls of standard size, the balls securely wrapped with non-synthetic, untreated, biodegradable burlap, and tightly bound with non-synthetic, biodegradable rope or twine. Alternatively they may be placed in wire basket lined with non-synthetic, untreated, biodegradable burlap and tightly bound with non-synthetic, biodegradable rope or twine. Bare root plants shall have a healthy, well branched root system characteristic of the species and with adequate spread.

Containerized plants shall be well established in the container with a root system sufficiently developed to retain its shape and hold together when removed from the container. Plants shall not be pot bound, nor have kinked, circling, or bent roots.

Plants shall conform to the measurements specified, except that plants larger than those specified may be used if approved by the Purchaser. Use of larger plants shall not increase the contract price nor allow the Contractor to use smaller than specified material on other plants. If larger plants are approved, the root ball, root spread, or container shall be increased in proportion to the size of the plant.

Caliper measurements shall be taken on the trunk 6 inches (15 cm) above the root collar for trees up to 4 inches (10 cm) in caliper, and 12 inches (30 cm) above the root collar for trees over 4 inches (10 cm) in caliper. Height and spread dimensions specified refer to the main body of the plant and not from branch tip to branch tip. Plants shall be measured when branches are in their normal position. If a range of size is given, no plant shall be less than the minimum size, and no less than 50 percent of the plants shall be as large as the maximum size specified. Plants that meet measurements but do not possess a normal balance between height and spread shall be rejected.

Substitutions of plant materials will not be permitted unless authorized in writing by the Purchaser. If proof is submitted, substantiated in writing, that a plant specified is not obtainable, consideration will be given to the nearest available size or similar variety, with a corresponding adjustment of the contract price.

- B. All plants shall be labeled by size and scientific plant name as listed in the current edition of **Index of Garden Plants**. Labels shall be attached securely to all plants, bundles, and containers of plant materials when delivered. Plant labels shall be durable and legible, with information given in weather-resistant ink or embossed process lettering.
- C. Mulching material shall consist of aged or composted wood chips or shredded bark and shall be free of material injurious to plant growth. Wood chips shall be 1/8 inch nominal thickness with at least 50 percent having an area of not less than 1 square inch and no piece having an area of more than 6 square inches.
- D. Water shall be provided by the _____ (Contractor/Purchaser - *select one*) and be suitable for irrigation and free from ingredients harmful to plant life.
- E. Trunk wrapping material, if specified, shall be perforated drainage tubing or similar material approved by the Purchaser, large enough in diameter to prevent abrasion of the trunk and to allow air circulation between the tubing and the trunk.

- F. Guying and staking materials, if specified, shall be as follows. Stakes shall be 6' to 8' long sections of unflanged metal or 2" x 2" hardwood. Support ties shall be 2" or wider bands of polypropylene, or elasticized or webbed strapping. Ground anchors shall be arrowhead shaped earth anchors of malleable iron castings, aluminum castings, or stamped steel.

5. Certification

- A. All plant materials, shipments, and deliveries shall comply with state and federal laws and regulations governing the inspection, shipping, selling, and handling of plant stock. A certificate of inspection, or a copy thereof, for injurious insects, plant diseases, and other plant pests shall accompany each shipment or delivery of plant material. The certificate shall bear the name and address of the source of the stock.

6. Selection and Tagging

- A. Plants shall be subject to inspection for conformity to specification requirements and approval by the Purchaser at their place of growth prior to award of bid. Inspection outside the state of Idaho shall be made
Option 1. at the expense of the _____ (Contractor/Purchaser - *select one*).
Option 2. through photographs submitted by the Contractor.
- B. *Option 1.* Include this paragraph if tagging particular trees for purchase. A written request for the inspection of plant material at their place of growth shall be submitted to the Purchaser at least 5 working days prior to digging. This request shall state the place of growth and the quantity of plants to be inspected. The Purchaser may refuse inspection at this time if a sufficient quantity of plants is not available for inspection.
Option 2. Omit digging notification language if no tagging of trees to purchase is planned.
- C. *Option 1:* All plants shall be selected and tagged by the Purchaser at their place of growth. *This option will add to the cost of the tree because of increased handling and tracking by the nursery, but it assures which plants you are purchasing.*
Option 2: Omit tagging at place of growth language. *Some marginal stock could be delivered as a result and will require more careful inspection at delivery.*
- D. Plants shall be inspected upon delivery, and the Purchaser reserves the right to reject any plants that do not meet the standards or that have been damaged during shipment. Such approval shall not impair the right of inspection and rejection during progress of the work.
- E. A Contractor's representative shall be present at all inspections.
- F. The Purchaser shall be the sole judge of acceptability of stock at any time during the course of this contract.

7. Digging and Handling Plant Materials

- A. Plants to be balled-and-burlapped shall be dug with firm, natural balls of earth of diameter not less than that recommended in the current edition of **American Standard for Nursery Stock**, and of sufficient depth to include fibrous and feeding roots. The root collar shall be within the top 2" of the soil ball. Balled and burlapped plants with manufactured balls or balls that are dry, cracked, or broken before or during planting operation will not be accepted.

8. Transportation and Storage of Plant Material

- A. Fresh dug material is given preference over plant material held in storage. Plant material held in storage will be rejected if excessive growth or dieback of branches has occurred in storage.
- B. Branches shall be tied with rope or twine only, and in such a manner that no damage will occur to the bark or branches.
- C. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees. Should the roots be dried out, large branches broken, balls of earth broken or loosened, or areas of bark torn, _____ (Purchaser's Representative) may reject the injured tree(s) and order them replaced at no additional cost to the Purchaser.
- D. The root systems of each load of bare root stock sent from the storage facility shall be adequately covered with wet soil, sawdust, wood chips, moss, peat, straw, hay or other acceptable moisture-holding medium, and shall be covered with an open-mesh tarpaulin or canvas. Loads that are not protected in the above manner may be rejected. *Note: tight-woven tarps and canvas can cause a load of trees to overheat on a sunny day, resulting in serious damage.*
- E. Plants must be protected at all times from sun or drying winds; Those that cannot be planted immediately on delivery shall be kept in the shade, well protected with soil covered with wood chips

or other acceptable material, and kept well watered. Plants shall not remain unplanted any longer than 3 days after delivery without permission from the purchaser. Plants shall not be bound with wire or rope at any time so as to damage the bark or break branches. Plants shall be lifted and handled with suitable support of the soil ball to avoid damaging it.

9. Delivery

- A. Bid prices shall include delivery to the Purchaser's receiving site located at _____ (address). All trees shall be delivered to the specified site before _____ (date).
- B. Plant materials shall not be shipped C.O.D., and any shipment so made will be refused by the Purchaser.
- C. The Contractor shall give the Purchaser notice of delivery time 3 to 5 days prior to delivery.

10. Excavation of Planting Areas

- A. The Purchaser will _____ (stake/mark with paint - *select one*) all planting areas. The Contractor will notify Digger's Hotline to verify location of underground utilities before excavation begins. The Contractor shall be responsible for assuring that utility marking is complete before excavation begins. The Contractor shall be responsible for all damage resulting from neglect or failure to comply with this requirement.
- B. The Contractor shall excavate planting areas as shown on the drawings. (*The drawings may have to be customized depending on choice of options below*). Excavation may be done by shovel, backhoe or stump grinder, but a soil auger may not be used. *Digging the hole with a stump grinding machine produces the most friable soil and minimizes glazing of the sides of the hole particularly in heavy clay soils. Soil augers glaze the sides of the planting hole, particularly in heavy clay soils, preventing penetration by the roots into the surrounding soil. Augers could be acceptable in sandy soils if any glazing of the sides was broken up and surrounding soil was tilled.*
Options: Research has shown that a wider planting hole improves establishment of a tree, particularly in heavy soils. The best option for the tree is a hole 3 (or more) times the diameter of the soil ball or root ball. Common practice in the industry is 1.5 to 2 times the ball diameter so this option will be more expensive. Loosening the soil with a rotary tiller, beyond the hole, 6-12" down will have nearly the same effect as a wide hole and will be somewhat cheaper. If the planting site is restricted e.g. between the sidewalk and the curb, you will not be able to dig a round hole. In this case you should dig an equivalent rectangular area. See Table 1 on page 10 for conversion examples.
Option 1. The planting hole shall be at least 3 times the diameter of the soil ball and the soil shall be loosened beyond the edge of the planting hole. *This option should be selected in particularly heavy or compacted soils or when the best conditions are desired for the tree.*
Option 2. The planting hole shall be at least 2 times the diameter of the soil ball and the soil shall be loosened at least one ball diameter's distance beyond the hole to a depth of 6" to 12" using a rotary tiller.
Option 3. The planting hole shall be 1.5 to 2 times the diameter of the soil ball. *This option should only be used in light, sandy, uncompacted soils.*

The soil pad on which the soil ball or root ball will be placed shall be of undisturbed soil. The depth of the pad shall correspond to the distance from the bottom of the soil ball to the root collar, or slightly less. Glazed planting hole surfaces shall be sufficiently roughened prior to backfilling. *Note: The root collar is the area where the roots join the trunk. For most trees in native settings, the root collar is just below the soil surface, though it may be 1-5" lower for oak, hickory and pear. With bare root trees the root collar's location is obvious. With nursery grown B&B trees the root collar is rarely visible often being several inches below the surface of the soil ball. This depth can be determined by checking the depth in the nursery before the trees are harvested; or by using a wire and gently probing the ball to find the major roots; or by estimating, knowing that the roots will likely be about 4" below the swelling at the base of the trunk. This swelling is caused by either a graft union or cutting back of a rooted cutting.*

- C. Excavated planting holes that will be left open when work is not in progress or pose an immediate and considerable hazard to pedestrians or vehicles shall be adequately barricaded with appropriate warning devices.

- D. The Contractor shall notify the Purchaser, in writing, of soil conditions or other obstructions the Contractor considers detrimental to tree growth. Such conditions shall be described, as well as suggestions for correcting them. Proper water drainage must be assured.
- E. Where soil conditions or below ground obstructions which cannot be remedied are encountered, the Purchaser shall designate alternate planting locations. The Purchaser shall bear any costs associated with such relocation.

11. Planting Operations

- A. Plants must be protected from excessive vibrations. Plants shall not be thrown or bounced off a truck or loader to the ground. Plants shall not be dragged, lifted, or pulled by the trunk or foliage parts in a manner that will loosen the roots in the ball.
- B. Plants shall be set with the top of the root collar at or slightly above finished grade. Plants must be centered in the hole and set plumb. Plants shall be set so that they will be at the same depth 1 year after planting. *Note: planting depth is important because research has shown that some species planted to deep will develop trunk diseases or girdling roots or be more susceptible to breakage in wind storms. These problems often don't show up until years after planting.*
- C. Bare root plants shall have their roots spread into a natural position, free of bunching, kinking, or circling. All broken or damaged roots shall be cut back to the point where they are clean and free of rot. No other root pruning shall be done.
- D. For plants in plastic, metal or biodegradable containers, the container shall be removed before planting. If roots are crowded or coiled on the bottom, sides, or surface of the root ball, they shall be gently separated from the edges or surface.
- E. For all plants moved with a tree spade, all holes and cavities between the ball and the surrounding soil shall be filled. Glazed planting hole surfaces shall be sufficiently roughened prior to backfilling. The ball shall be thoroughly soaked with water after planting.
- F. Removal of ropes, strings, wire baskets, burlap, and other wrappings from B&B plants.
Options: The intent here is to prevent girdling of the trunk by the twine and restriction of root growth by the burlap and wire basket. How to do it is controversial. With Option 1, removal of the twine and burlap assures that there will be no restriction, however if improperly done, the soil ball may crack or fall apart which would threaten tree survival. Make sure that the ball is in the hole and well supported with backfill before the twine, etc. is loosened. Option 2 minimizes potential for disrupting the ball, but depends on natural decomposition. It requires additional inspection to make sure that the materials are decomposing. Also, be aware that the burlap must be completely covered with soil. If exposed to the air, it will dry out, potentially wicking moisture from the ball and making it difficult to re-wet. If the root collar is deep in the ball and the ball planted high as a result, soil will have to be mounded above grade to assure the burlap is covered. Option 1 must be selected if there is a wire basket or if synthetic twine or burlap or treated burlap is used. (note that in section 4A. synthetic burlap and twine are not allowed.)
Option 1. After the plant has been set and one half of the backfilling completed to support the ball, ropes, strings, wire baskets, burlap, and other wrappings shall be removed from the top one-half of the ball. The balance of the wrappings may be left intact around the bottom half of the ball. If the root collar is deep in the ball, remove excess soil away from the trunk using hands, not tools.
Option 2. Once the tree is set and backfilled, any rope, string or twine should be removed from around the trunk. The Contractor will ensure that within 60 days, all ropes, strings, burlap, and other wrappings will have decomposed so as not to restrict growth of trunk and roots. If this has not occurred, the contractor must remove the restricting materials within one week of notification by the purchaser.
- G. Planting holes shall be backfilled with excavated soil. When holes are approximately two-thirds full, they shall be thoroughly watered to eliminate air pockets. After this initial watering, excavated soil shall be installed to the top of the hole and watered. Prevent puddled soil conditions by avoiding compaction once the soil is wet. If burlap and wrappings are not removed they must be covered with soil.
- H. Planting areas shall be finish-graded to conform to drawings after full settlement has occurred.
- I. All plants shall be mulched over the root system with a 3-4-inch layer of aged wood chips or bark immediately after planting. Mulching material shall be pulled back no less than 3" and no more than 6" from the trunk.

- J. Plants shall be thoroughly watered immediately after planting.
- K. All twine, rope, transit guards or wrappings, and plant labels secured around the trunk or branches shall be removed after planting is completed.

12. Guying, Staking, Wrapping, and Pruning

- A. Only those plants designated by the Purchaser shall have trunk protection installed or be staked and/or guyed. *Note: Research has shown that typical paper or cloth tree wrap provides no benefit to the tree. However, where deer, voles or other animals may cause damage, protecting the trunks is called for. Staking is not recommended as a routine practice. Exceptions may include particularly windy areas, areas where vandalism is expected or when planting large bare root trees in light soil.*
- B. Only trees so designated shall have approved trunk protection installed. The trunk protection shall be secured at the top and bottom of the trunk in a manner so as not to restrict or damage the bark (see specification 4-E). The Purchaser will be responsible for removing trunk protection after a one year period.
- C. Only trees so designated shall be staked and guyed. Ties made of approved material shall be attached directly to the stakes or may be attached to stakes by wire. In no case shall the wire extend around the tree trunk. Ties should be attached loosely enough to allow a small amount of play in the trunk. For drooping stems, ties shall be placed at the point on the stem at which the top can stand up on its own. Stakes shall be driven outside the root ball. For trees larger than 3" in caliper, use ties attached to 3 guy wires and ground anchors. Ground anchors are to be driven at about a 45-degree angle to the ground and placed at 120-degree intervals around the trunk. Staking and guying shall further conform to the drawings. The _____ (Purchaser/Contractor - *select one*) will be responsible for removing all stakes and straps after a one year period. These stakes and straps will _____ (become/remain - *select one*) the property of the _____ (Purchaser/Contractor - *select one*) and should be figured into the bid.
- D. Double leaders, dead branches and any branches damaged or broken during the planting process shall be the pruned. This shall be the only pruning allowed at planting. Pruning shall conform to ***American National Standard for Tree Care Operations, ANSI A300.***

13. Cleanup

- A. Soil, branches, binding and wrapping material, rejected plants, or other debris resulting from any tree planting shall be promptly cleaned up and removed. The work area shall be kept safe and neat at all times until the cleanup operation is completed. Under no condition shall the accumulation of soil, branches, or other debris be allowed upon a public property in such a manner as to result in a public hazard.

14. Acceptance

- A. The Purchaser shall perform an inspection with the Contractor of all plant material after the original planting to note and correct any discrepancies.
- B. Acceptance of plant material by the Purchaser shall be for general conformity to specified size, character, and quality and shall not relieve the Contractor of responsibility for full conformity to the contract documents, including correct species.
- C. Upon completion and re-inspection of all repairs or renewals necessary in the judgment of the Purchaser, the Purchaser shall certify in writing that the work has been accepted. Any plant work so accepted will be paid within 30 days at the contract bid price, unless previously negotiated otherwise.
- D. Work may be accepted in parts when the Purchaser and Contractor deem that practice to be in their mutual interest. Approval must be given in writing by the Purchaser to the Contractor verifying that the work may be completed in parts. Acceptance of work in parts shall not waive any other provision of this contract.

15. Guarantee Period and Replacement

- A. The Contractor shall guarantee all plants to be healthy and in flourishing condition for _____ (one/two - *select an option*) year(s) from the date of acceptance.
Option 1: The guarantee does not include vandalism, storm damage, animal damage or mechanical damage unrelated to contractor activities. This language can be included to reduce the cost, however it is not recommended, particularly if the contractor is responsible for the maintenance.
- B. The Contractor shall remove and replace, without cost, and as soon as weather conditions permit, and within a specified planting period, all plants not in a healthy and flourishing condition as

determined by the Purchaser any time during the guarantee period. Replacements shall be subject to all requirements stated in this specification.

- C. Option: The guarantee of all replacement plants shall extend for an additional period of _____ (one/two - *Select an option*) year(s) from the date of their acceptance after replacement. In the event that a replacement plant is not acceptable during or at the end of the said extended guarantee period, the Purchaser may elect subsequent replacement or credit for that item. Note: *This language may be included, but it will likely increase the cost.*
- D. The _____ (Contractor/Purchaser - *Select one*) shall be responsible for all maintenance of the trees during the guarantee period. Note: *Some contractors may be unwilling to guarantee the trees if they are not responsible for the maintenance.*

16. Final Inspection and Acceptance

At the end of the guarantee period and upon written request of the Contractor, the Purchaser shall inspect all guaranteed work for final acceptance. The request shall be received at least 5 working days before the anticipated date for final inspection. Upon completion and re-inspection of all repairs or renewals necessary in the judgment of the Purchaser at that time, the Purchaser shall certify, in writing, that the project has received final acceptance.

17. Payment

A variety of payment schedules are possible. The following is only one possibility. In any schedule, it is wise to hold back some amount until the guarantee period is over. Payment shall be made to the Contractor as follows:

50% of the contract sum upon receipt and approval of plant materials by the Purchaser.

35% of the contract sum upon completion of planting or the plant materials.

10% of the contract sum after the replanting of replacement material if required.

5% of the contract sum after final acceptance.

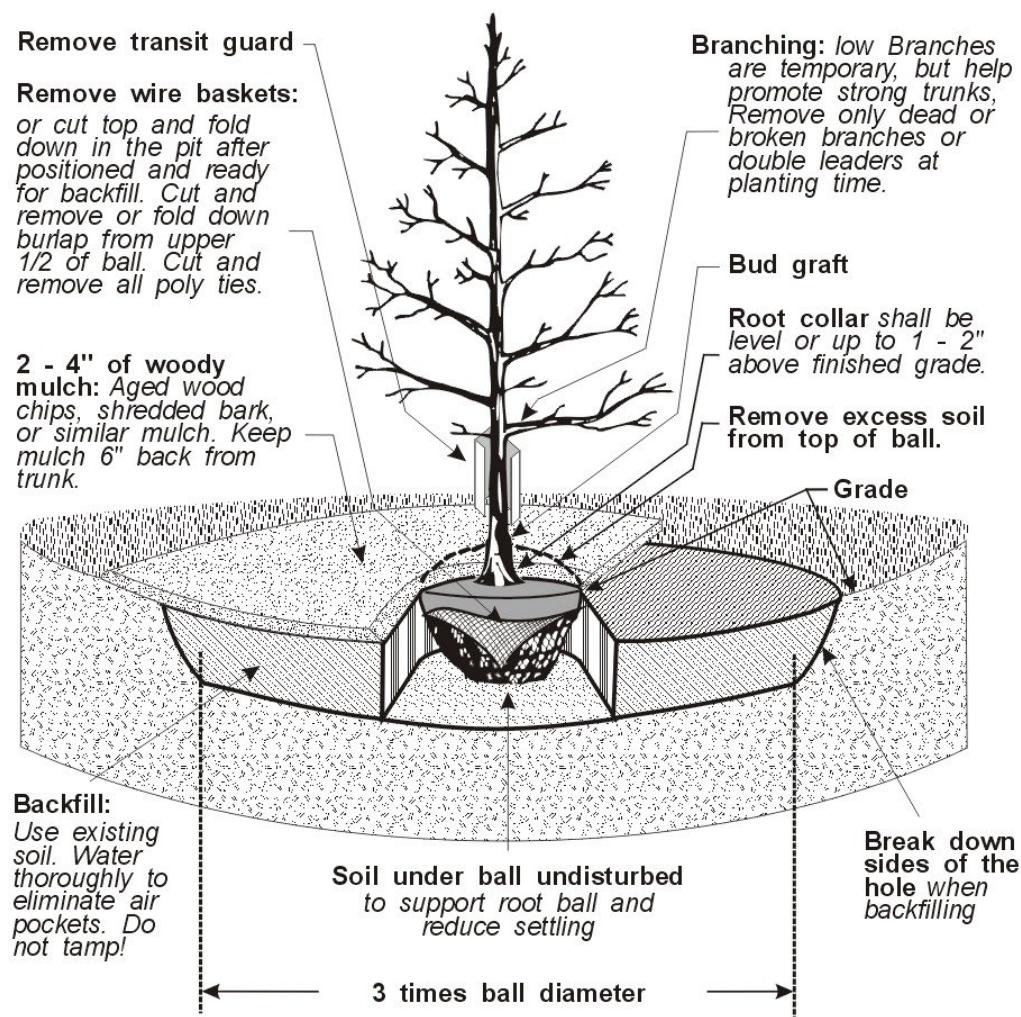
Table 1. Converting a Circular Hole to a Rectangular Planting Space

Tree Caliper	Ball Diameter	Hole Diameter	Hole Area	3' wide Terrace	4' wide Terrace	5' wide Terrace	6' wide Terrace
1"	16"	48"	12 ft ²	3' x 4'	N/A	N/A	N/A
1.5"	20"	60"	20 ft ²	3' x 7'	4' x 5'	N/A	N/A
2"	24"	72"	28 ft ²	3' x 9'	4' x 7'	5' x 5.5'	N/A
2.5"	28"	84"	39 ft ²	3' x 13'	4' x 10'	5' x 8'	6' x 6.5'
3"	32"	96"	50 ft ²	N/R	4' x 12.5'	5' x 10'	6' x 8'

N/R = Not Recommended

N/A = Not Applicable (circular hole fits in given space)

Proper Tree Planting Diagram



David J. Stephenson

Stake only if you have to. Use 2-3"-wide webbing straps and secure to stakes with heavy gauge wire. The wire should be able to stick straight out from the stake and hold the webbing strap up, preventing it from sliding down the tree. Do not stake tightly - trees gain strength from movement. Remove all stakes after one year. Use of tree wrap is not recommended, as it causes a number of problems for the tree.